PROJECT NAME:
Brazoria County Boat Ramps

PROJECT LOCATION:
Brazoria County, TX

PROVIDED BY:
Scott Douglas

Sol®
Reliable. Renewable. Remarkable.

Greenway Series
SOLAR POWERED LED LIGHTING SYSTEM

MANUFACTURER: Sol Inc.
Wholly-owned subsidiary of Carmanah Technologies Corp.

Web: solarlighting.com
Web: carmanah.com

GENERAL DESCRIPTION

The GreenWay® Series features an integrated battery enclosure and your choice of luminaire. A specially designed solar pole meets wind loads associated with solar lighting and makes positioning the luminaire simple with no visible bolts. The system is configured according to your location and lighting requirements to run throughout the night or to save energy with dimming when full light is not required.

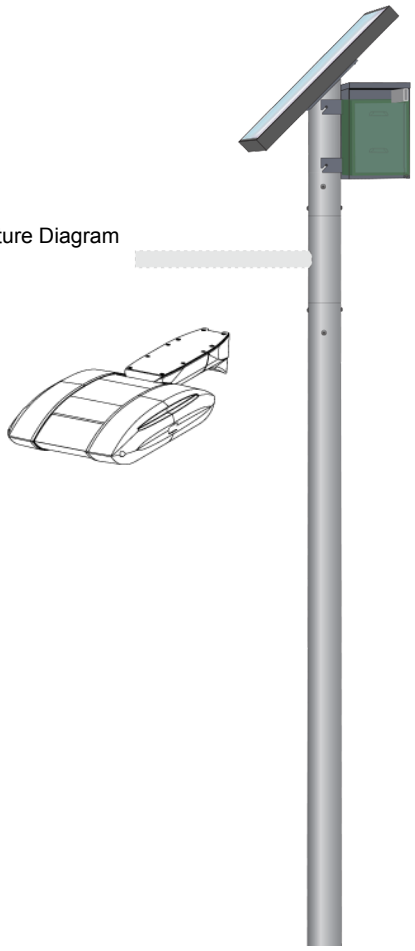
PRODUCT ORDER NUMBER

GY-3.7-BZ-125W-2-Edge20-3ME-57K-BZ-30-7D2-45

SOLAR LIGHTING SYSTEM DESCRIPTION

SOLAR ENGINE DETAILS	
Model	GY
Tilt Angle	45 degrees
Solar Panel Wattage	125W
Battery Type	Gel G27
Battery Quantity	2
OPERATING DETAILS	
Latitude	32.83N
Longitude	97.05W
Array To Load Ratio	1.3
Autonomy	5 days
Insolation (Min Month Avg)	4.4 kWh/m^2/day
Operating Profile	Split Night, 7hr, 30%, 2hr
FIXTURE DETAILS	
Lumens	2104 Lumens
Fixture Type	EDGE 20
LEDs Per Fixture	20 LEDs
Fixtures Per System	One Fixture
Fixture Wattage	30 W
Fixture Voltage	30 V
Light Distribution	Type 3 Med
Light Color Temperature	5700K Cool White

Lighting System Diagram



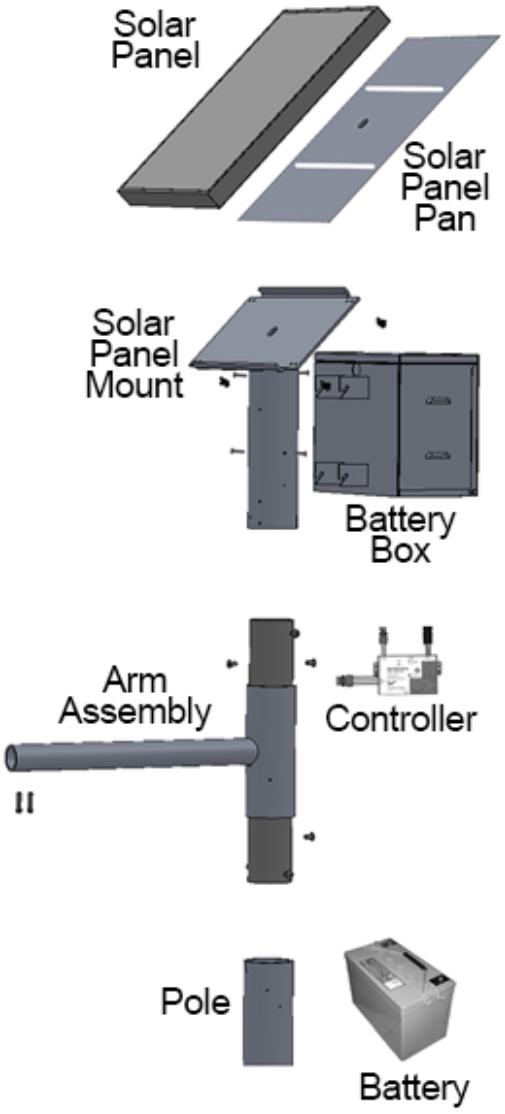
Fixture Diagram

All product performance data is dependent upon installation location.

2015-09-09

SOLAR ENGINE

SPECIFICATIONS	
Engine EPA	1.20 m² (12.91 ft²)
Engine APA	N/A
Weight (without Batteries)	31 kg (69 lb)
Weight (with Batteries)	90 kg (199 lb)
Panel Length	1488 mm (58.58 in)
Panel Width	662 mm (26.06 in)
Panel Watts	125W
Tilt Angle	45 degrees
Vandalism Protection	Top-of-pole mounted
Enclosure	Grade A. Aluminum
Electronics	Weather resistant
Solar Panels	High efficiency, performance matched to the energy management system for solar lighting applications.
Chassis Fastener	Hot-dip galvanized steel and stainless steel
Operating Temperature	-25°C to +55°C (-13°F to 131°F)
Storage Temperature	-25°C to +60°C (-13°F to 140°F)
Manufacturing	Manufactured in the USA in a facility registered to ISO 9001:2000 quality management system standards
MOUNTING	
Engine Mounting	4.0"ID / 4.5"OD Schedule 4 straight aluminum direct burial pole. Standard 24' pole included.
Panel Direction	For Northern hemisphere panel faces due south. For Southern hemisphere panel faces due north.
Installation Time	45 minutes or less
BATTERIES	
Battery Type	Gel G27
Battery Quantity	2
Battery Capacity	100Ah (12V, at approximately 100 hr)
Depth of Discharge (Average)	25%
Cycles	2200
Rating	5+ years

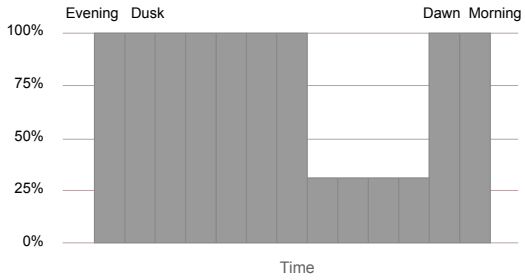


* Effective Projected Area (EPA) calculated as the Actual Projected Area (APA) multiplied by a drag coefficient of 1.3. EPA of engine only: does not include fixture EPA.
** 3 second gust as per AASHTO 2001
***Rating based on an annual average temperature of 20°C (68°F)

OPERATION

SPECIFICATIONS	
Latitude	32.83N 97.05W
Insolation (Min Month Avg)	4.4 kWh/m^2/day
Temperature (Average)	20 C (68 F)
Longest Night	14 hrs
Array To Load Ratio	1.3
Autonomy	5 days
Operating Profile	Split Night, 7hr, 30%, 2hr
Transitioning	Via solar panels
Status Indicators	Battery connection, low/high voltage disconnect, dimming.

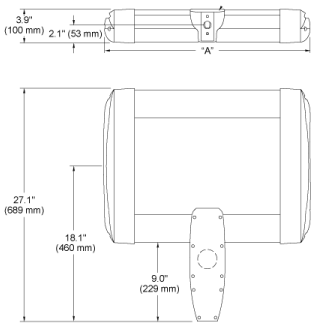
Operating Profile



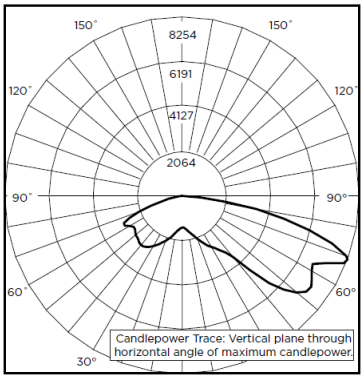
FIXTURE

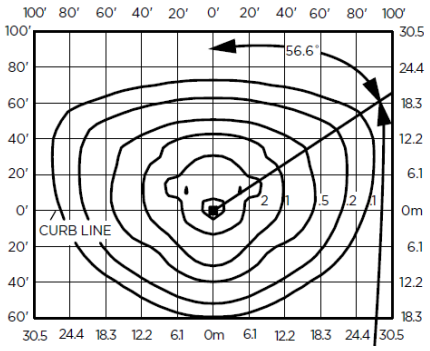
SPECIFICATIONS	
Lumens	2104 Lumens
Fixture Type	EDGE 20
Fixture Manufacturer	Cree Inc.
LEDs Per Fixture	20 LEDs
Fixtures Per System	One Fixture
Fixture Efficacy (Minimum)	70.1 lm/W
Fixture Wattage	30 W
Light Color Temperature	5700K Cool White
Rendering Index (CRI)	Minimum 70
Rated Life 70	> 60,000 @ 25°C (77°F)
Operating Temperature	-30°C to +50°C (-22°F to 122°F)
Housing	Die-cast aluminum construction
Finish	Colorfast DeltaGuard(R) Bronze
Fixture Dimensions	688mm x 306 mm x 99 mm (27.1 in x 12.1 in x 3.9 in)
EPA	0.056 m² (0.6 ft²)
Fixture Weight	10 kg (21 lb)
Mounting Details	Mounts directly to 76-152mm (3.0-6.0in) square or round pole.
Manufacturing	Manufactured in the USA in a facility registered to ISO 9001:2000 quality management system standards
Mounting Height Arm Length	For fixture mounting height and arm length, please refer to your project's lighting layout. Fixture arms are quoted separately.

Fixture Diagram



Light Distribution Plots





LIGHT DISTRIBUTION

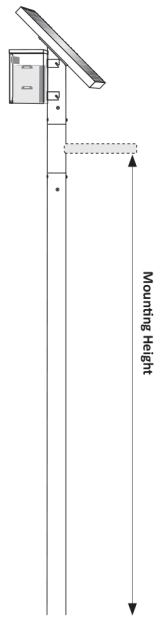
SPECIFICATIONS	
Light Distribution	Type 3 Med
Photometry	All published photometric testing performed to IESNA LM-79-08 standards by a NVLAP certified laboratory.
Other	International Dark-Sky Association (IDA) approved

POLE SPECIFICATIONS

NOTE:	
Engine Type	GY
Weight (with Batteries)	90 kg (199 lb)
Engine EPA	1.20 m² (12.91 ft²)
Engine APA	N/A
Engine Mounting	4.0"ID / 4.5"OD Schedule 4 straight aluminum direct burial pole. Standard 24' pole included.

MAST ARM SPECIFICATIONS

NOTE:	
Fixture Type	EDGE 20
Fixtures Per System	One Fixture
Fixture Weight	10 kg (21 lb)
EPA	0.056 m² (0.6 ft²)
Mounting Details	Mounts directly to 76-152mm (3.0-6.0in) square or round pole.
Fixture Mounting Height and Arm Length	For fixture mounting height and arm length, please refer to your project's lighting layout. Fixture arms are quoted separately.



SYSTEM SIZING

The Sol simulation and selector tool ensures that the correct system is chosen for the application specified by the user. Incorporating the local weather conditions for the location in which the solar engine will be deployed, the simulation tool provides a guarantee of Greenway Series system performance over the product's lifespan.

SOLAR PANELS

Selected for high module conversion efficiency, positive tolerance, extended wind and snow load testing, weak light performance, self-cleaning and anti-reflective capabilities, the solar panels utilized by the Sol and Carmanah systems are provided by world-leading manufacturers of crystalline silicon modules that adhere to the highest international standards.

SOLAR ENGINE

The Greenway solar engine is engineered to withstand extreme environmental conditions, including heat, wind, corrosion, rain, hail, dust and sand. A slip-fit mounting system simplifies installation, while a sturdy metal chassis and secure enclosure protects systems from vandalism. Grade "A" Corrosion resistant aluminum are also employed to further aid system durability.

BATTERIES

Gel batteries are tested to withstand years of deep cycle use within high and low temperatures and are field-proven to perform with the Greenway series systems. Recognized under UL 1989, the batteries (Group 27) are designed specifically for solar power applications and are completely recyclable. When in storage, batteries must be recharged every two months. See the Accessories section for Extended Storage Battery Charger products.

ENERGY MANAGEMENT SYSTEM

The EternO4 Energy Management System ensures bright, reliable light output and healthy, high-functioning lighting systems for years of maintenance-free operation. The EternO4 provides an optimum transfer of energy and is responsible for the opportunity to employ operating profiles.

CERTIFICATIONS

SOLAR ENGINE

CE 2004-108-CE, EN 55015, EN 61547 for emissions and immunity.

PANELS

UL 1703, IEC 61215, IEC 61730, conformity to CE.

FIXTURE

cULus Listed, suitable for wet locations, enclosure rated IP66 per IEC60529. Certificed to ANSI C136.31-2001, 3G bridge and overpass vibration standards. Dark Sky Friendly. IDA Approved. RoHS compliant. DLC qualified.

OPERATING PROFILES

The Energy Management System (EMS or EternO4) controls LED drivers which control LED fixtures based on the operating profile. Controlled by customer's specifications, the operating profile is configured at the factory and is designed to maximize lumen output when it is required and reduce lumen output as activity lessens in an effort to conserve energy. The EMS and EternO4 offer two types of operating profiles: all-night (dusk to dawn) and profiles adapted for usage during peak hours (for example: 7-dim-2, which means that the light is on for seven hours at 100%, dimmed for a period of time, then returning to 100% for two hours).

FIXTURE

The fixtures selected by the Carmanah selector tool are specifically configured for the solar LED lighting systems' operation to guarantee light output, performance and system reliability as specified by the customer. Fixture housing is aluminum construction and LED optical modules are tested to IESNA LM-79-2008 and LM-80-2008 standards. Fixtures are IDA Approved, Dark Sky Friendly and RoHS compliant, and the enclosure is rated to IP66 per IEC60529. Fixtures are UL listed in the U.S. and Canada.

WARRANTY

The Greenway solar LED lighting systems is covered under the FivePlus(TM) Warranty, with batteries pro-rated.

ACCESSORIES

DESCRIPTION	PART NO.	FEATURES
Hardware Spares Kit	N/A	Spare hardware for the assembly of the engine. Recommended one per ten systems.
Extended Storage Battery Charger	GPSC-10-12	Charging system for batteries in long-term storage (2 months)
Install Kit	N/A	Includes lifting strap and u-bolts for ease of installation. Recommended two per project.
Infrared (IR) Controller	N/A	Recommend two per project.